

From: [John West](#)
To: [Carol Tillis](#)
Cc: [Richard Chen](#); [Christian Haudenschild](#)
Subject: CEO Update presentation for Board meeting
Date: Thursday, December 13, 2012 12:55:20 PM
Attachments: [Personalis Board Review.pptx](#)

Hi Carol,

The attached slides are final. They are in 16x9 format for presentation, but I don't expect time to get through all of it at the meeting.

This is OK to distribute to the Board with all the other presentations.

There are just the two Appendices sent earlier - Not a 3rd as originally anticipated.

All can be printed for the books.

Thanks,

John West



Personalis™

PIONEERING GENOME GUIDED MEDICINE

CEO Overview

John West

Personalis, Inc. Board Meeting
December 14, 2012



Personalis™

Agenda

- Comp Committee:
 - 2012 Bonus plan – Review of 2012 performance & proposal for bonus
 - Final review expected at Jan 2013 Board meeting
 - Proposed comp restructuring for 2013, per guidance at Nov 1 Board meeting
 - New hire options
 - Proposed option adjustments for three key employees
- Updates:
 - CEO update
 - Finance update (Carol Tillis)
 - Operations update (Christian Haudenschild)
 - R&D update (Rich Chen)
- Meet with proposed clinical strategy consultant, Dr. Katherine Tynan

CEO Update - Outline

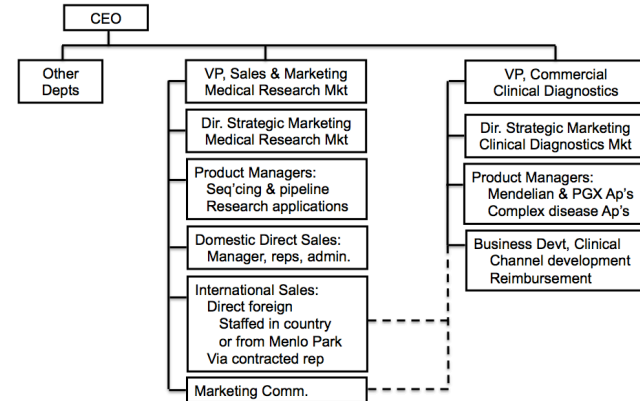
- Current company status
- Status of recruitment for commercial organization
- Early commercial role-out plans
- 2013 Budget planning, focus on revenue plan
- UK 100,000 genomes project
- Investor & banker update
- Company analysis of clinical diagnostic business issues
- Status: Sequencing of Venter & large CEPH family for accuracy devt.
- Follow-up to Jon Fieber's request re: How we came to current lab strategy

Current company status

- Sequencing completed & analysis under way for 1st customer (Moyamoya)
- Contract signed by VA for 1,370 whole genomes, then protest hold
 - Most recent guidance from VA : GAO review may take to Jan 18th
- Initiating additional biological product testing in-house & with collaborators
- Exec search underway for VP Sales & Marketing, Sr. Director Sales
- Year-end cash now projected \$1.5M above original 2012 budget
 - Even with \$1.5M lab build-out
- Launch of initial products 4-6 weeks behind original schedule
 - Mainly due to delays in key R&D and scientific-IT hiring
 - Company cash position 2-3 months above plan

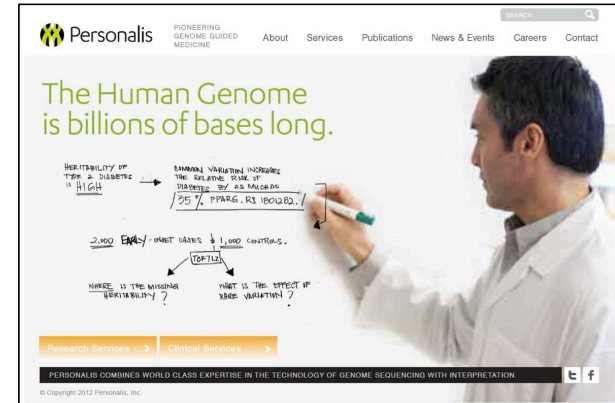
Status of recruitment for commercial organization

- Exec search firm DavenportMajor
- VP Sales & Marketing
 - Life science research prioritized
 - Marketing prioritized
 - Four top candidates so far:
 - Luminex VP & GM
 - Gentura & ex-Novartis VP Marketing
 - Agilent, Global Director Field Operations
 - Small diagnostic company, CCO
- Sr. Director, Sales
 - Challenge with non-VP title
 - Candidates ex-ABI, Affymetrix, GeneDx



Early Commercial Role-Out Plans

- New web site under development
- Initial collateral under development
- Three abstracts accepted for AGBT
 - Currently posters, negotiating speaker
- Several early sales leads via Illumina
 - Service business Illumina doesn't take
 - Exomes & extensive data analysis
 - Local Illumina rep still gets credit with us
 - Illumina Certified Service Provider by 12/31
 - El Camino Genomic Medicine Institute



2013 Budget Planning – Focus on Revenue Plan

- Prospect list, presented at Nov 1 BoD meeting, converted to project specifics & potential revenue schedule
- Individual customers vary from “PO in-hand” to just prospects, but seem likely representative
- Bottoms-up analysis reached \$10M for 1st revenue year; May budget for \$8M
- 11 customers, \$100k - \$2.4M each
- 4,280 exomes & 2,213 genomes
- 60% of revenue nominally from sequencing, but premium prices motivated by Personalis analysis
- < 8% of this draft plan is clinical

Preliminary – Still in planning

Customer	Project	Who does the sequencing	Data analysis	Comments	Total Revenue, All Services, by Quarter & FY 2013 Total				
					Revenue calculation notes	Q1 2013	Q2 2013	Q3 2013	Q4 2013
ord Steinberg Mayamoya	130 unrelated exomes	Personalis	Case-control	Price just covers seq cost		\$ 100,000			\$ 100,000
ord Steinberg Mayamoya	20 exomes of 2 families	Personalis	DVDS	May not have \$	20 x 2.5k = \$50k				\$ 50,000
212	1,370 WGS	Personalis	Pipeline & annotation	1,370 x \$561 = \$768,570		\$ 140,000	\$ 630,000		\$ 770,000
213	Continue same level	Personalis	Pipeline & annotation					\$ 192,500	\$ 192,500
213	500+ exomes	Personalis	Pipeline & annotation		200 WGS/q x \$2.5k	\$ 500,000	\$ 500,000	\$ 500,000	\$ 1,500,000
Cornell Med	10 + 100's WGS	Personalis	Pipeline & annotation		300 genomes x \$750		\$ 112,500	\$ 112,500	\$ 225,000
Cornell Med	10 + 100's WGS	Personalis	Pipeline & annotation		300 exomes x \$2.5k		\$ 375,000	\$ 375,000	\$ 750,000
ntech	900 exomes	Personalis	Pipeline & annotation		300 ex/q for 3 qtr x \$2k	\$ 600,000	\$ 600,000	\$ 600,000	\$ 1,800,000
ntech	Analysis only 200 WGS	Customer	Pipeline & annotation		200 genomes x \$700	\$ 140,000			\$ 140,000
ntech	Placeholder for potentially 1,000 exomes & WGS	TRD							\$ 0
stanford	51 trios' exomes	Customer	DVDS	Collab initially	None, but poss follow-on				\$ 0
zina	8 exomes	Customer	DVDS	Collab initially	None, but poss follow-on				\$ 0
Alto VA abdominal aortic				Exploring lead via					\$ 0
rim	300 exomes	Customer	Case-control	Mike Snyder	None in model yet				\$ 0
Alzheimers	36 + 100 WGS	Customer, at CGI ?	Case-control	Premature but model like Genentech WES		\$ 600,000	\$ 600,000	\$ 600,000	\$ 1,800,000
nger Health	200 trios' exomes	Customer	DVDS-trios	Atul lead - Must be CLIA (analysis only)	50 trios/qtr x \$5k/trio	\$ 250,000	\$ 250,000	\$ 250,000	\$ 750,000
pharma corp	600-1,200 exomes + WGS	Personalis	Case-control	Lead from Illumina sales rep	300 WGS/q @ \$2k	\$ 600,000	\$ 600,000	\$ 600,000	\$ 2,400,000
						\$ 840,000	\$ 2,190,000	\$ 3,667,500	\$ 9,927,500

For Jan 23rd Board meeting:
 Refine revenue
 Add full expense detail
 Draft 5-year plan for Series B investors



UK 100,000 Genomes Project

- Announced Dec 10 by UK Prime Minister, David Cameron
 - His 6-yr old son died of a rare genetic disease in 2009
- 3-5 year plan
- 100M pounds
- 1,000 pounds per genome
- National Health Service, patient medical records
- Abingworth & former Solexa colleagues identifying key contacts
- Stanford professors already engaged
- May require a UK presence (as we planned from the start)



Investor & banker update

- Barclays banker approached us unsolicited.
 - Focus on relationships with Chinese entities.
 - Set up meeting introducing WuXi
- Baird banker approached us unsolicited
 - Material re IPO's (median \$100M EV pre-IPO) and public company EV / Ratios median 2.8-3.5 in Life Sciences & Diagnostics growth segment
- Sectoral Asset Management
 - Approach MDV unsolicited & was referred
 - Knew of Personalis via J.West former colleague at sequencing center in Lausanne
 - Interested in our Series B for their new private-company fund, to close Jan/Feb 2013

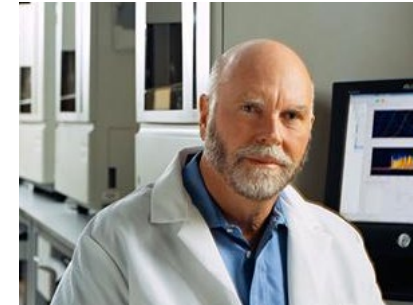
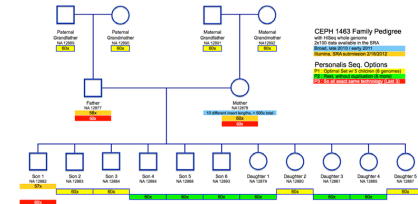


Personalis Analysis of Clinical Diagnostic Business Issues

- Scale of clinical diagnostics market is much larger than research. Next gen sequencing clinical opportunity seems compelling
- Comparative financial analysis of other clinical diagnostic companies, from SEC filings (incl S-1's)
- Largest diagnostic companies are profitable, but average price / test \$30-40, with 40% margins.
- Myriad & Genomic Health (both in breast cancer arena) use genetic analysis technologies considered state-of-the-art when they launched. Pricing \$2-3k, closer to Personalis-appropriate range.
- Excellent gross margins (80-90%) but poor profitability for many years (Myriad almost 20 years)
- Key challenge is very high SG&A (typically 60% at \$200M annual run rate) to drive physician adoption & payor reimbursement. Genomic Health (GHDX) barely profitable after 10 years.
- Very small number of tests / year ordered by GHDX-adopting physicians. Dilute return on Bus Devt \$.
- GHDX recognized revenue / test < 25% of list price initially & took 3-4 years to reach 70%.
- Athena Diagnostics (recently \$110M/yr) broke even at \$15M/year run rate. Focused on a single medical specialty, addressable with a modest sales force. Over 15 years to \$100M & sold 5 times.
- How to capture clinical potential of next gen sequencing without ruinous financials getting there ?
 - Personalis engaging Dr. Katherine Tynan, consultant in molecular diagnostics
 - Experienced (sobered !)
 - Key issues are related to distribution & adoption aggregation

Status : Sequencing of Venter & Large CEPH family

- Venter only single human fully sequenced using the “gold-standard” Sanger sequencing technology
- CEPH1463 pedigree has three complete generations, including 11 grandchildren
- Mother at center of CEPH pedigree tentative NIST / FDA 1st US National Standard human genome sample (“Genome-in-a-Bottle”)
- Both great targets for accuracy analysis & reference
- Personalis Board approved outsourced sequencing at May 8th meeting
- Complete Genomics had already published early CEPH1463 data
- Complete Genomics delivered Venter & replicate (up to date) CEPH mother genomes on schedule
- Illumina made a partial delivery but suffered an internal service lab problem, had to “retract” contaminated data & most recently projected Jan/Feb 2013 completion of delivery.
- Order with Illumina cancelled & sequencing undertaken by Personalis in-house lab :
 - Venter exome & whole genome now completed
 - CEPH1463 : Whole pedigree exome sequenced & last few genomes being completed
 - Analysis to follow



Follow-on to Jon Fieber's Request re: How we came to our current lab strategy

Full details in
Appendices 1&2

AT THE BEGINNING

- Our group's scientific understanding of the accuracy issue was developed by Mike Snyder & Euan Ashley (Stanford) and John West starting in early 2010 – IP eventually licensed by Personalis
- Scientifically well understood by late 2010 1st meetings with Personalis prospective investors & in numerous publications continuing today
- Initial financial plan & pitch slides included:
 - R&D headcount: 1/3 each to software development, curation & accuracy teams
 - Plans for both laboratory and bioinformatic approaches to improve accuracy
 - Importance of accuracy in both research and clinical markets
 - Budget line item for in-house lab equipment and outsourced sequencing
 - Focus on whole genome sequencing, assumption that that would be outsourced, but potential for proprietary multi-platform supplementary assays to address specific accuracy issues
 - Assumption that clinical plans could take a while

Follow-on to Jon Fieber's Request re: How we came to our current lab strategy

Full details in
Appendices 1&2

WHAT HAS & HASN'T CHANGED

- We still assume that whole genome sequencing will be primarily outsourced, with potential for Personalis custom assays to supplement for improved accuracy in difficult areas
- Exomes far outpaced genomes and demonstrated more staying power than originally anticipated
- Complete Genomics did not enter exome competition and Illumina, never large in it as a service, exited to focus on whole genome, and product sales. Exomes have gross margin opportunity we can leverage with our analysis, IP & assays.
- With Complete Genomics problems, and Illumina's internal lab problems, outsourced genome delivery grew to 9 months – impractical for our R&D and many of our customers
- Illumina developed much longer reads on their small MiSeq platform than are available on their whole genome platform (HiSeq). This became our choice for implementing accuracy assays.
- Ambry, GeneDx, Baylor & others announced diagnostic exomes at ASHG Oct 2011, spurring Personalis to move more quickly to its own CLIA lab.
- Investment in laboratory facilities, staffing & equipment are still expected to be a small part of the capital needed for scaling Personalis. They are expected to augment our revenue and margin ramp substantially, accelerating our path to investor liquidity.



Discussion

- Transfer to next presentation